IN THE CLAIMS

Please cancel Claims 24-28 and 61-72 without prejudice or disclaimer of subject matter.

Please amend Claims 73, 83 and 84 to read as follows. (Among the amended claims, Claim 84 has been withdrawn from consideration as directed to a non-elected invention.)

1-72. (Canceled)

73. (Currently Amended) A method for manufacturing a piezoelectric element structure having a supporting substrate and a piezoelectric film supported on the supporting substrate, said method comprising the steps of:

forming by a vapor method on the supporting substrate, in this order, a first layer having a perovskite structure and a second layer having a perovskite structure and zirconium, a temperature at a time of formation of the first and second layers being at least 500°C during the vapor method, and the first layer being formed so as to contain no zirconium or an amount of zirconium less than an amount of zirconium contained in the second layer; and

cooling from the formation temperature at least to 450°C with a cooling speed of at least 30°C/minute.

74. (Previously Presented) A method for manufacturing a piezoelectric element structure according to Claim 73, further comprising forming an intermediate layer in which the zirconium concentration increases inclinatorily from the first layer to the second layer, after the formation of the first layer and before the formation of the second layer.

75. (Previously Presented) A method for manufacturing a piezoelectric element structure according to Claim 73, wherein in the forming step the ratio of zirconium/titanium in the second layer is set to be at least 30/70 and at most 70/30.

76. (Previously Presented) A method for manufacturing a piezoelectric element structure according to Claim 73, wherein the piezoelectric film is one of a mono-orientational crystal and a monocrystal.

77. (Previously Presented) A method for manufacturing a piezoelectric element structure according to Claim 73, further comprising forming the piezoelectric film so as to have an orientation in the direction (100).

78. (Previously Presented) A method for manufacturing a piezoelectric element structure according to Claim 73, further comprising arranging an electrode on each side of the piezoelectric film, forming the piezoelectric film so as to have an orientation in the direction (111), and forming the electrodes to be comb-shaped or to be arranged on an entire face of the piezoelectric film.

79. (Previously Presented) A method for manufacturing a piezoelectric element structure according to Claim 73, further comprising forming the piezoelectric film so as to have a thickness of at most 10 μm.

80. (Previously Presented) A method for manufacturing a piezoelectric element structure according to Claim 73, further comprising forming the piezoelectric film so as to have a thickness of at least 1 μm and at most 4 μm.

81. (Previously Presented) A method for manufacturing a piezoelectric element structure according to Claim 73, further comprising forming the first layer of the piezoelectric film so as to have a thickness of at least 30 nm and at most 100 nm.

82. (Previously Presented) A method for manufacturing a piezoelectric element structure according to Claim 73, wherein the second layer of the piezoelectric film contains niobium, tin, and manganese, and provides antiferroelectric characteristics.

83. (Currently Amended) A method for manufacturing a piezoelectric element structure having a supporting substrate and a piezoelectric film supported on the supporting substrate, said method comprising the steps of:

forming by a vapor method on the supporting substrate, in this order, a first layer having a perovskite structure and a second layer having a perovskite structure and an element for preventing crystallization growth during a thin film forming process, a

temperature at a time of formation of the first and second layers being at least 500°C during the vapor method, and the first layer being formed so as to contain none of the element or an amount of the element less than an amount of the element contained in the second layer; and

cooling from the formation temperature at least to 450°C with a cooling speed of at least 30°C/minute.

84. (Withdrawn) A method for manufacturing a piezoelectric element structure having a supporting substrate and a piezoelectric film supported on the supporting substrate, said method comprising the steps of:

forming by a vapor method on the supporting substrate a layer having a perovskite structure, a temperature at a time of formation of the layer being at least 500°C during the vapor method; and

cooling from the formation temperature at least to 450°C with a cooling speed of at least 30°C/minute.

85. (Withdrawn) A method according to Claim 84, wherein the temperature is a temperature of the supporting substrate.